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Antifeedant Activity of Methanol and Hexane Extracts of Datura Innoxia (Mill.) (Solanaceae) in the Management of Spodoptera Litura (F.) (Lepidoptera: Noctuidae) Larvae

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Abstract : The antifeedant activity of methanol and hexane extract of leaves and seeds of Datura innoxia (Mill.) (Solanaceae) was evaluated against the 5th instar Spodoptera litura (F.) (Lepidoptera: Noctuidae) larvae in choice and no-choice leaf disc bioassays under laboratory conditions. These larvae when given a choice between the 'control' and 'treated' leaf discs in choice bioassays, consumed significantly ($p < 0.05$) greater area of the 'control' leaf discs compared to those treated with the crude extracts of leaves and seeds of D. innoxia. The Antifeedant Index (AFI) for 5% concentration of the hexane extract of Datura seeds (DSHE) was 43.3% and 38.5% for methanol extract of Datura seeds (DSME). On the other hand, these values were 34.1% for the hexane extract of Datura leaves (DLHE), and 31.0% for the methanol extract of Datura leaves (DLME), respectively. In no-choice bioassays also, there was a significant ($p<0.05$) reduction in the larval consumption of 'treated' leaf discs compared to the 'control' leaf discs. Maximum AFI was recorded at 5% concentration of the extracts of both the leaves and seeds with 47.7% for DSHE against 40.0% (DSME) and 39.4% for DLHE compared with 38.4% (DLME). Moreover, DSHE was found to have the maximum antifeedant effect irrespective of its concentration in comparison to the other crude extracts of leaves or seeds of D. innoxia. It is evident from these results that the crude methanol and hexane extracts of leaves and seeds of D. innoxia exhibited potent antifeedant activity against the 5th instar S. litura larvae. Also, the use of the bioactive compound(s) present in these extracts can prove to be an effective, eco-friendly, viable and sustainable component that can be integrated in IPM programs for the management of this economically important polyphagous insect pest in the Indian subcontinent.

Keywords : antifeedant activity, antifeedant index, datura innoxia, spodoptera litura
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